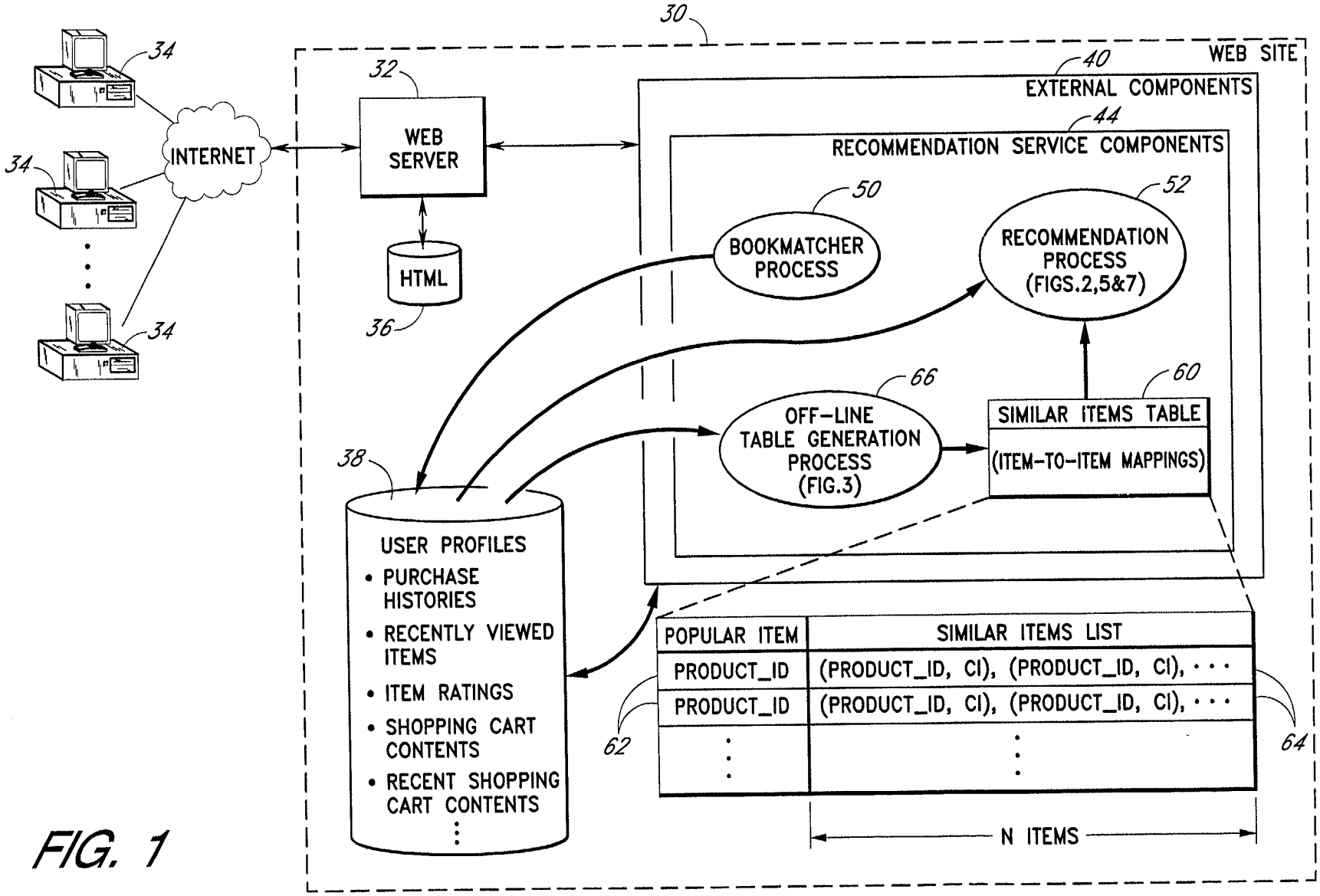

30
WEB SITE
34
34
34
INTERNET
32
WEB SERVER
HTML
36
40
EXTERNAL COMPONENTS
44
RECOMMENDATION SERVICE COMPONENTS
50
BOOKMATCHER PROCESS
52
RECOMMENDATION PROCESS (FIGS.2,5&7)
66
OFF-LINE TABLE GENERATION PROCESS (FIG.3)
60
SIMILAR ITEMS TABLE
(ITEM-TO-ITEM MAPPINGS)
38
USER PROFILES
• PURCHASE HISTORIES
• RECENTLY VIEWED ITEMS
• ITEM RATINGS
• SHOPPING CART CONTENTS
• RECENT SHOPPING CART CONTENTS
POPULAR ITEM
SIMILAR ITEMS LIST
PRODUCT_ID
(PRODUCT_ID, CI), (PRODUCT_ID, CI), • • •
PRODUCT_ID
(PRODUCT_ID, CI), (PRODUCT_ID, CI), • • •
62
64
N ITEMS

FIG. 1

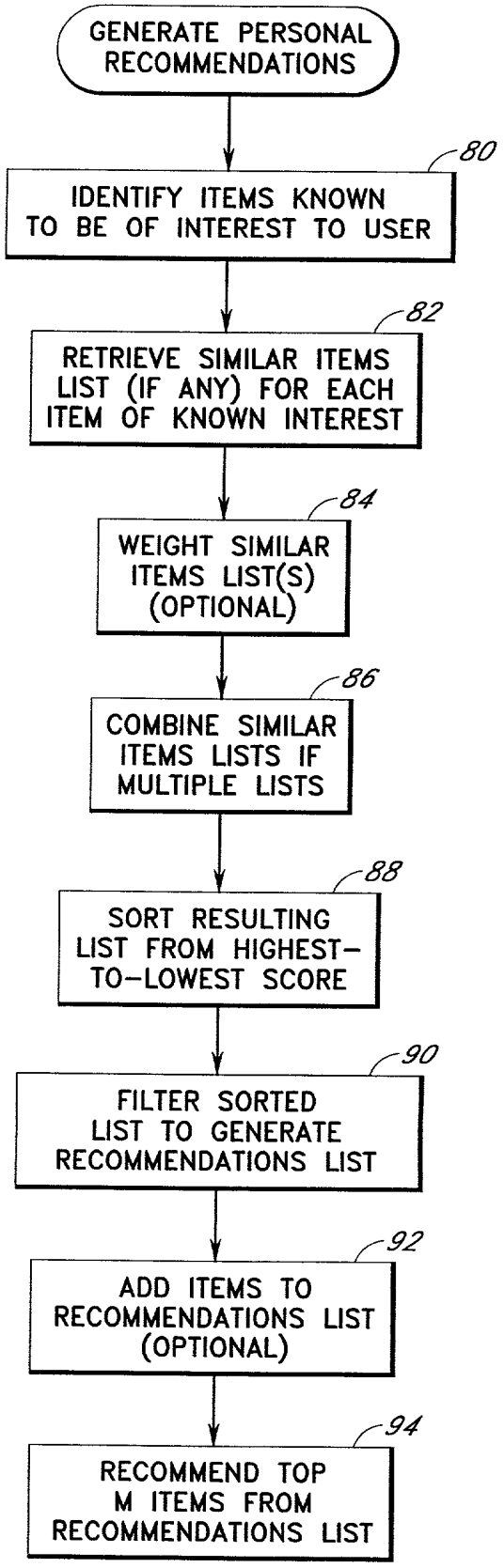

GENERATE PERSONAL RECOMMENDATIONS
80
IDENTIFY ITEMS KNOWN TO BE OF INTEREST TO USER
82
RETRIEVE SIMILAR ITEMS LIST (IF ANY) FOR EACH ITEM OF KNOWN INTEREST
84
WEIGHT SIMILAR ITEMS LIST(S) (OPTIONAL)
86
COMBINE SIMILAR ITEMS LISTS IF MULTIPLE LISTS
88
SORT RESULTING LIST FROM HIGHEST-TO-LOWEST SCORE
90
FILTER SORTED LIST TO GENERATE RECOMMENDATIONS LIST
92
ADD ITEMS TO RECOMMENDATIONS LIST (OPTIONAL)
94
RECOMMEND TOP M ITEMS FROM RECOMMENDATIONS LIST

FIG. 2

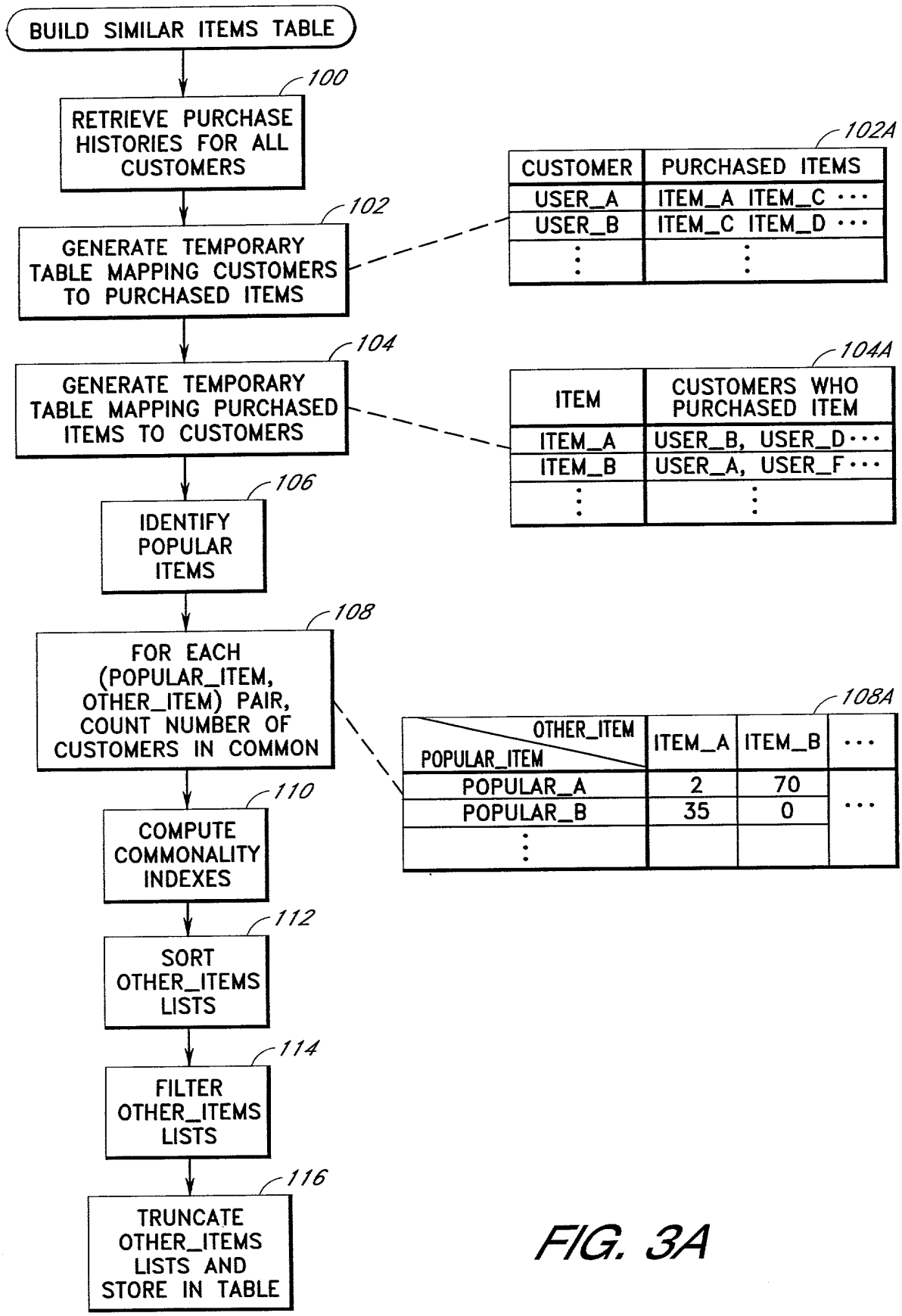

BUILD SIMILAR ITEMS TABLE
100
RETRIEVE PURCHASE HISTORIES FOR ALL CUSTOMERS
102
GENERATE TEMPORARY TABLE MAPPING CUSTOMERS TO PURCHASED ITEMS
102A
CUSTOMER
PURCHASED ITEMS
USER_A
ITEM_A ITEM_C ···
USER_B
ITEM_C ITEM_D ···
104
GENERATE TEMPORARY TABLE MAPPING PURCHASED ITEMS TO CUSTOMERS
104A
ITEM
CUSTOMERS WHO PURCHASED ITEM
ITEM_A
USER_B, USER_D···
ITEM_B
USER_A, USER_F···
106
IDENTIFY POPULAR ITEMS
108
FOR EACH (POPULAR_ITEM, OTHER_ITEM) PAIR, COUNT NUMBER OF CUSTOMERS IN COMMON
108A
OTHER_ITEM
POPULAR_ITEM
ITEM_A
ITEM_B
···
POPULAR_A
2
70
POPULAR_B
35
0
110
COMPUTE COMMONALITY INDEXES
112
SORT OTHER_ITEMS LISTS
114
FILTER OTHER_ITEMS LISTS
116
TRUNCATE OTHER_ITEMS LISTS AND STORE IN TABLE

FIG. 3A

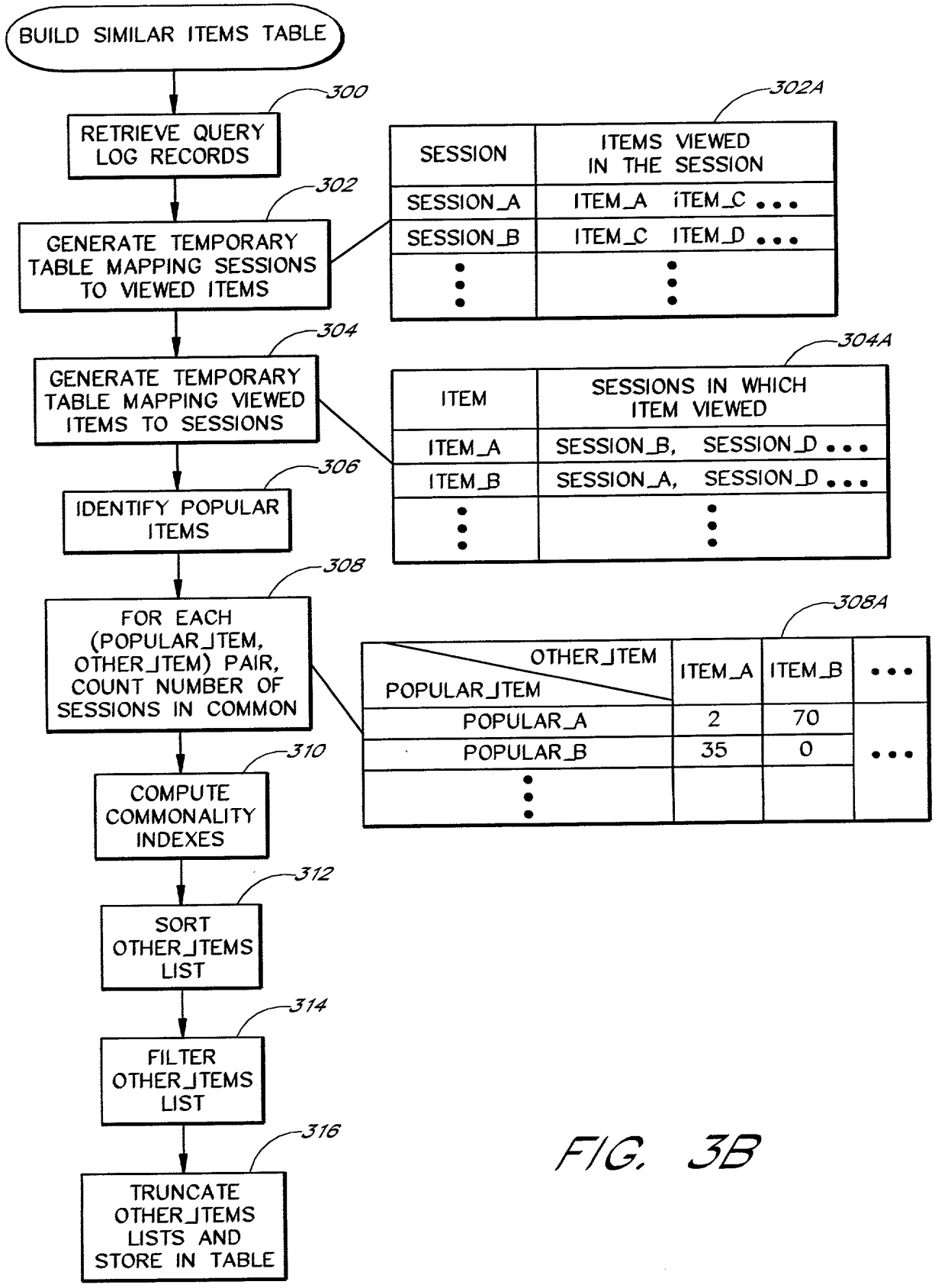

BUILD SIMILAR ITEMS TABLE
300
RETRIEVE QUERY LOG RECORDS
302
GENERATE TEMPORARY TABLE MAPPING SESSIONS TO VIEWED ITEMS
302A
SESSION
ITEMS VIEWED IN THE SESSION
SESSION_A
ITEM_A ITEM_C ...
SESSION_B
ITEM_C ITEM_D ...
304
GENERATE TEMPORARY TABLE MAPPING VIEWED ITEMS TO SESSIONS
304A
ITEM
SESSIONS IN WHICH ITEM VIEWED
ITEM_A
SESSION_B, SESSION_D ...
ITEM_B
SESSION_A, SESSION_D ...
306
IDENTIFY POPULAR ITEMS
308
FOR EACH (POPULAR_ITEM, OTHER_ITEM) PAIR, COUNT NUMBER OF SESSIONS IN COMMON
308A
OTHER_ITEM
POPULAR_ITEM
ITEM_A
ITEM_B
POPULAR_A
2
70
POPULAR_B
35
0
310
COMPUTE COMMONALITY INDEXES
312
SORT OTHER_ITEMS LIST
314
FILTER OTHER_ITEMS LIST
316
TRUNCATE OTHER_ITEMS LISTS AND STORE IN TABLE

FIG. 3B

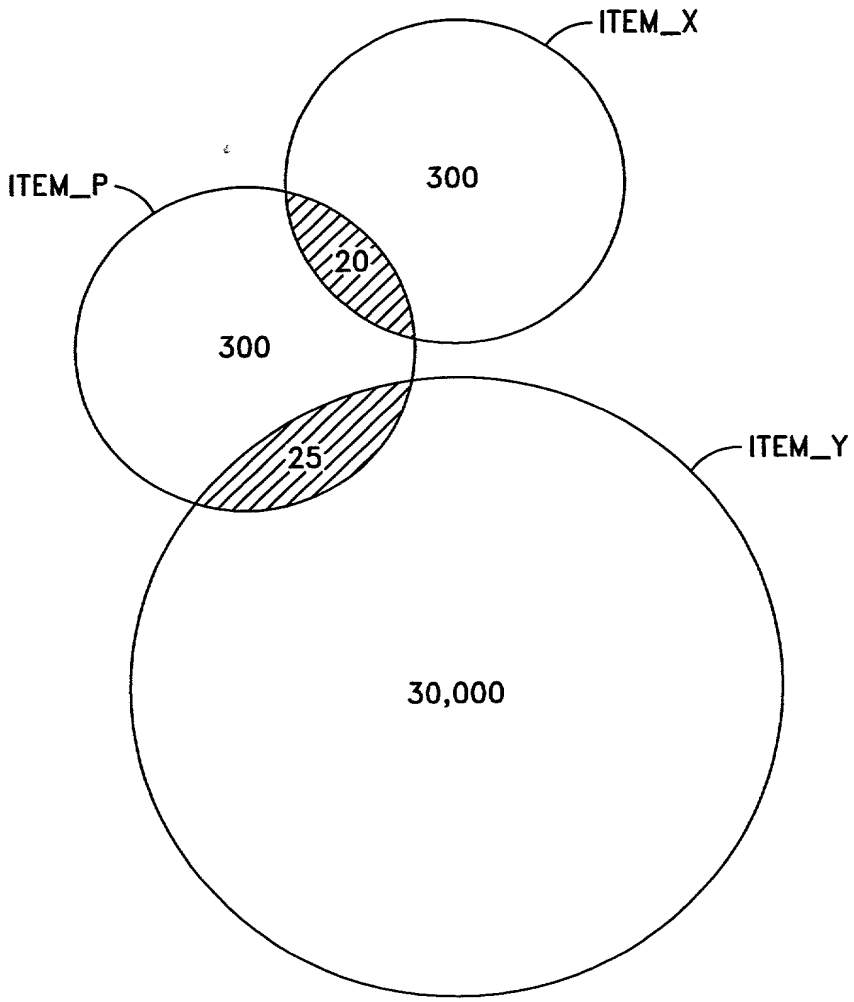


FIG. 4

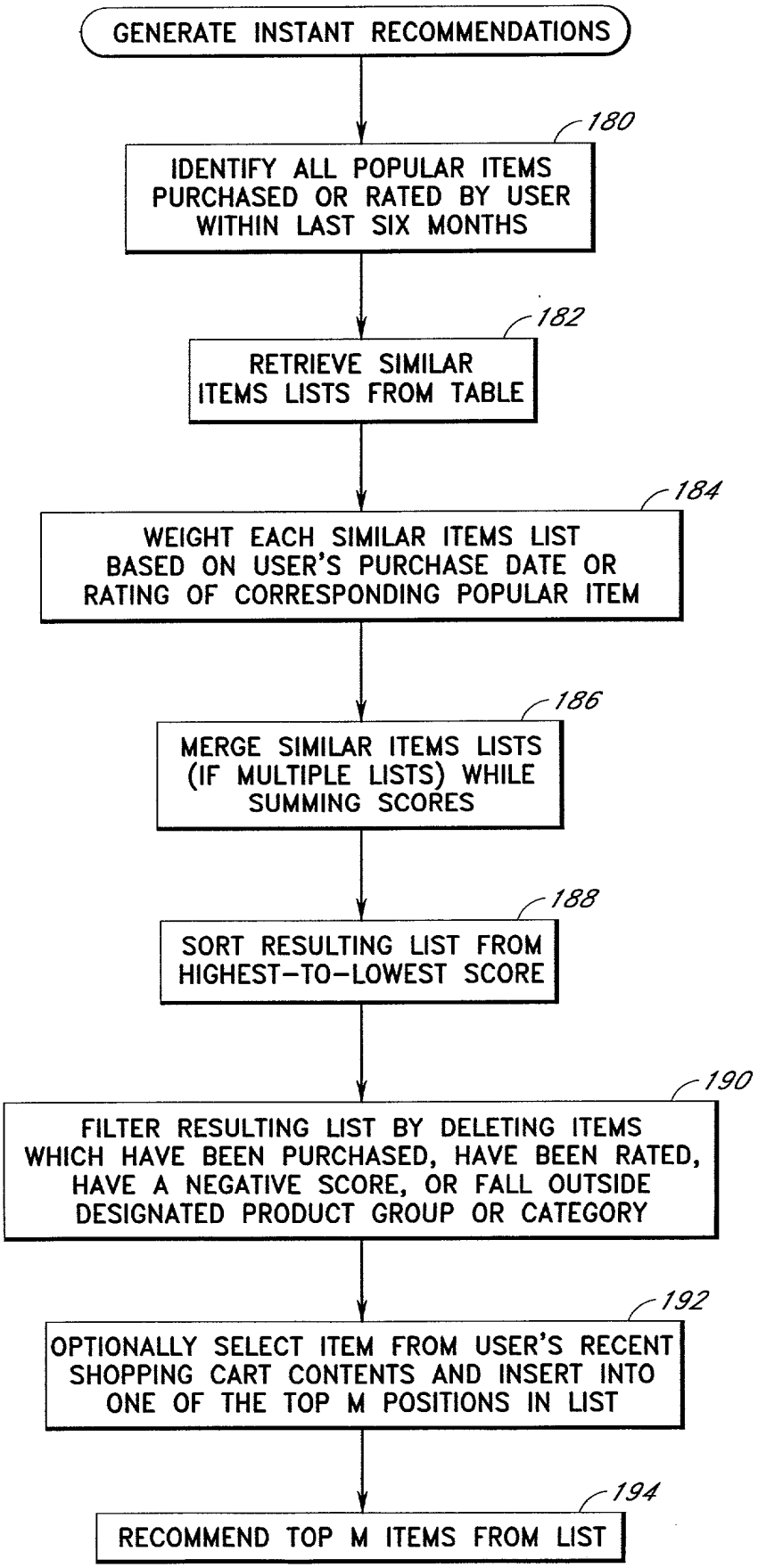

GENERATE INSTANT RECOMMENDATIONS
180
IDENTIFY ALL POPULAR ITEMS PURCHASED OR RATED BY USER WITHIN LAST SIX MONTHS
182
RETRIEVE SIMILAR ITEMS LISTS FROM TABLE
184
WEIGHT EACH SIMILAR ITEMS LIST BASED ON USER'S PURCHASE DATE OR RATING OF CORRESPONDING POPULAR ITEM
186
MERGE SIMILAR ITEMS LISTS (IF MULTIPLE LISTS) WHILE SUMMING SCORES
188
SORT RESULTING LIST FROM HIGHEST-TO-LOWEST SCORE
190
FILTER RESULTING LIST BY DELETING ITEMS WHICH HAVE BEEN PURCHASED, HAVE BEEN RATED, HAVE A NEGATIVE SCORE, OR FALL OUTSIDE DESIGNATED PRODUCT GROUP OR CATEGORY
192
OPTIONALLY SELECT ITEM FROM USER'S RECENT SHOPPING CART CONTENTS AND INSERT INTO ONE OF THE TOP M POSITIONS IN LIST
194
RECOMMEND TOP M ITEMS FROM LIST

FIG. 5

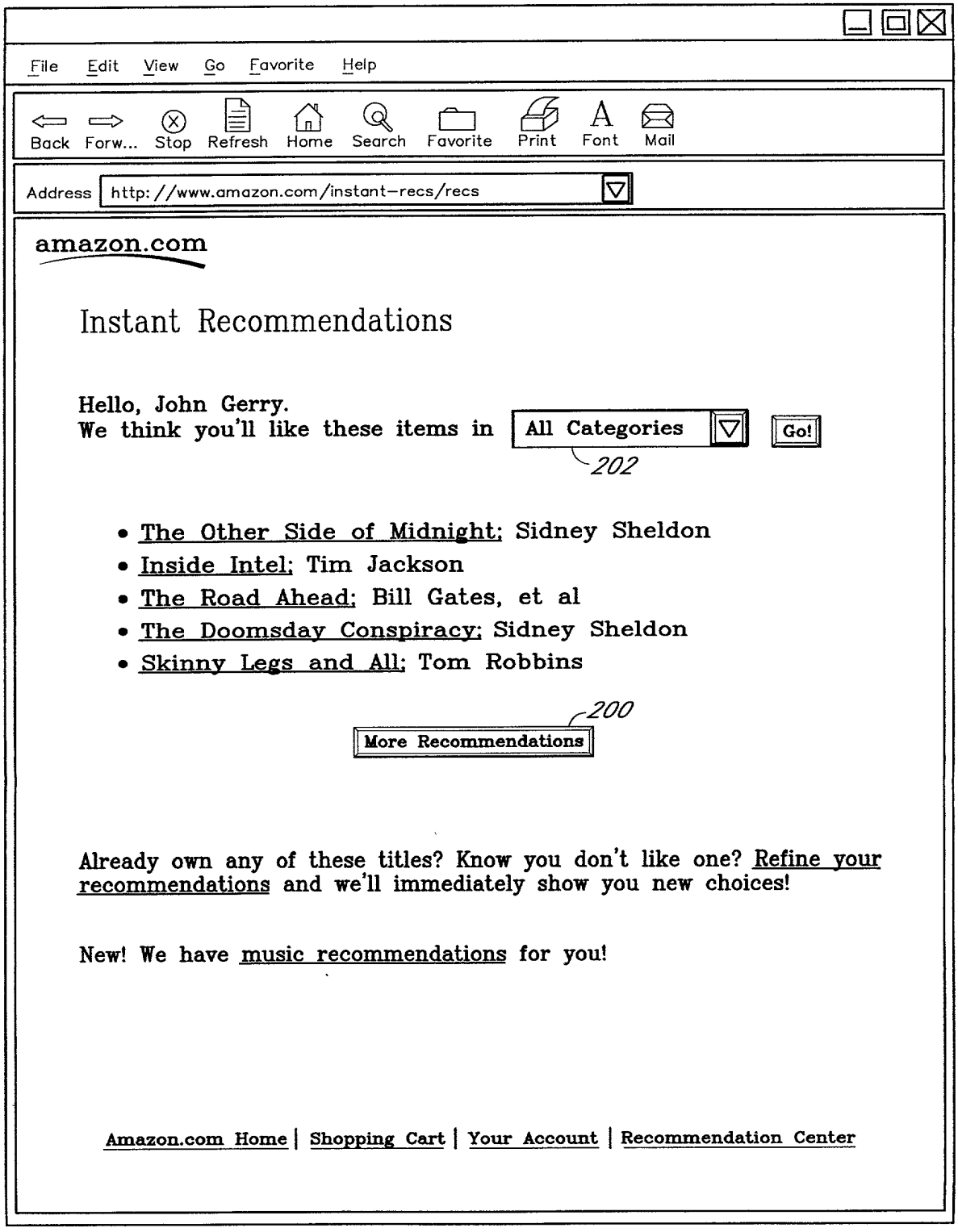

File Edit View Go Favorite Help
Back Forw... Stop Refresh Home Search Favorite Print Font Mail
Address http://www.amazon.com/instant-recs/recs
amazon.com
Instant Recommendations
Hello, John Gerry.
We think you'll like these items in All Categories Go!
202
The Other Side of Midnight; Sidney Sheldon
Inside Intel; Tim Jackson
The Road Ahead; Bill Gates, et al
The Doomsday Conspiracy; Sidney Sheldon
Skinny Legs and All; Tom Robbins
200
More Recommendations
Already own any of these titles? Know you don't like one? Refine your recommendations and we'll immediately show you new choices!
New! We have music recommendations for you!
Amazon.com Home | Shopping Cart | Your Account | Recommendation Center

FIG. 6

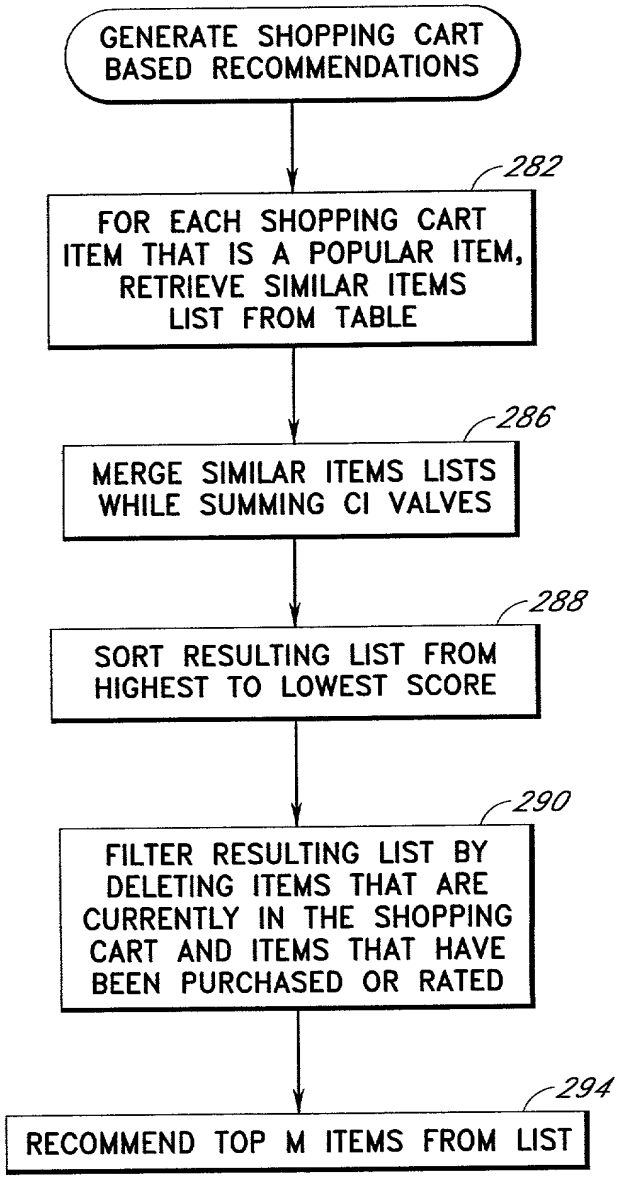

GENERATE SHOPPING CART BASED RECOMMENDATIONS
282
FOR EACH SHOPPING CART ITEM THAT IS A POPULAR ITEM, RETRIEVE SIMILAR ITEMS LIST FROM TABLE
286
MERGE SIMILAR ITEMS LISTS WHILE SUMMING CI VALVES
288
SORT RESULTING LIST FROM HIGHEST TO LOWEST SCORE
290
FILTER RESULTING LIST BY DELETING ITEMS THAT ARE CURRENTLY IN THE SHOPPING CART AND ITEMS THAT HAVE BEEN PURCHASED OR RATED
294
RECOMMEND TOP M ITEMS FROM LIST

FIG. 7

Search Report

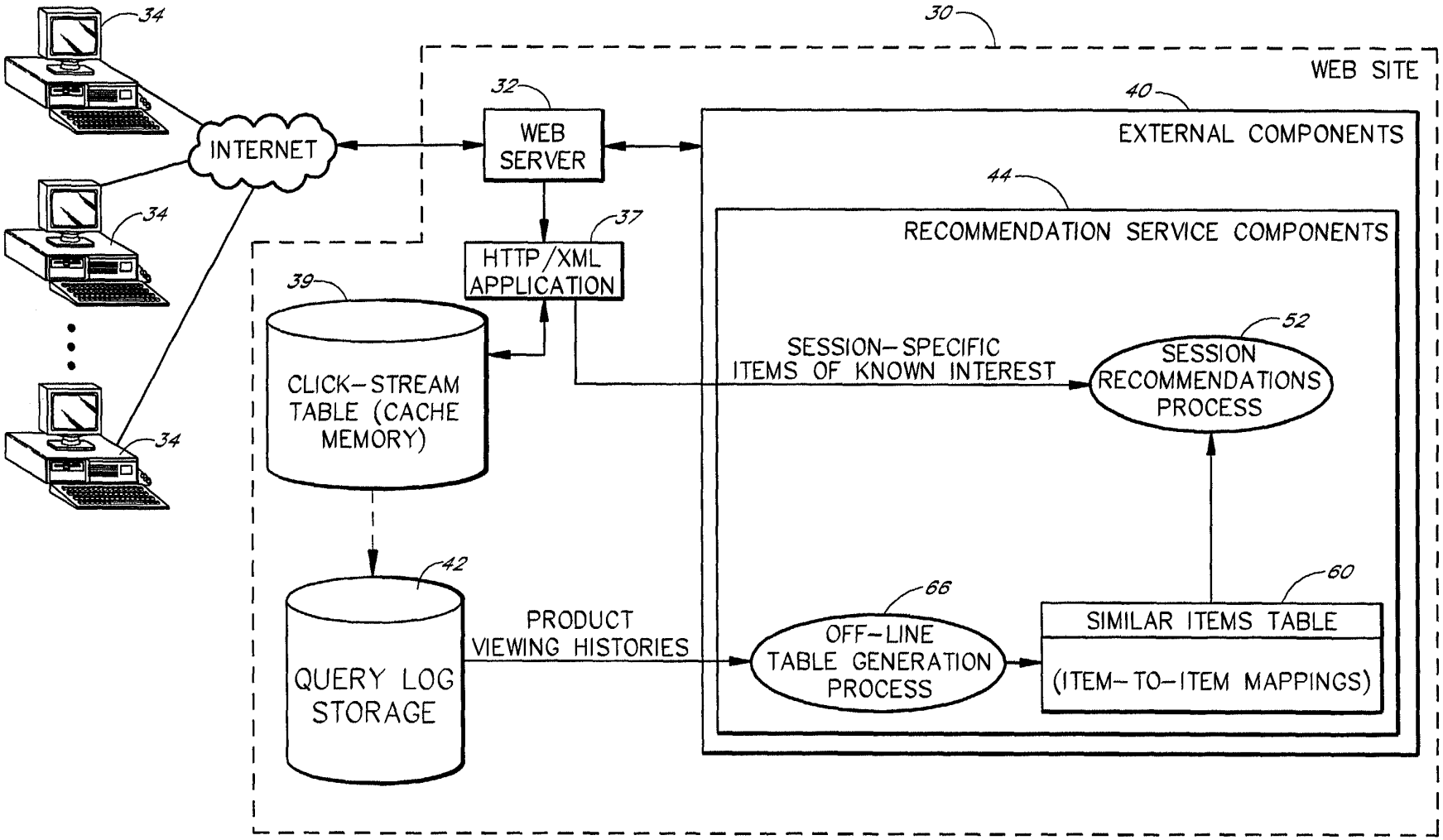


FIG. 8

CLICK STREAM TABLE

SESSION ID	DETAIL PAGE LIST	BROWSE NODE LIST	SEARCH QUERY LIST
1234567	dp1, dp2, dp3, dp4	bn1, bn2, bn3, bn4	"a space odyssey","isaac asimov"

FIG. 9

PAGE–ITEM TABLE

PAGE IDENTIFICATION	ITEM IDENTIFICATION
DP1	"2001: A Space Odyssey"
BN1	"Sony DVP–S360 DVD Player","Toshiba SD–1600 DVD player," ...

FIG. 10

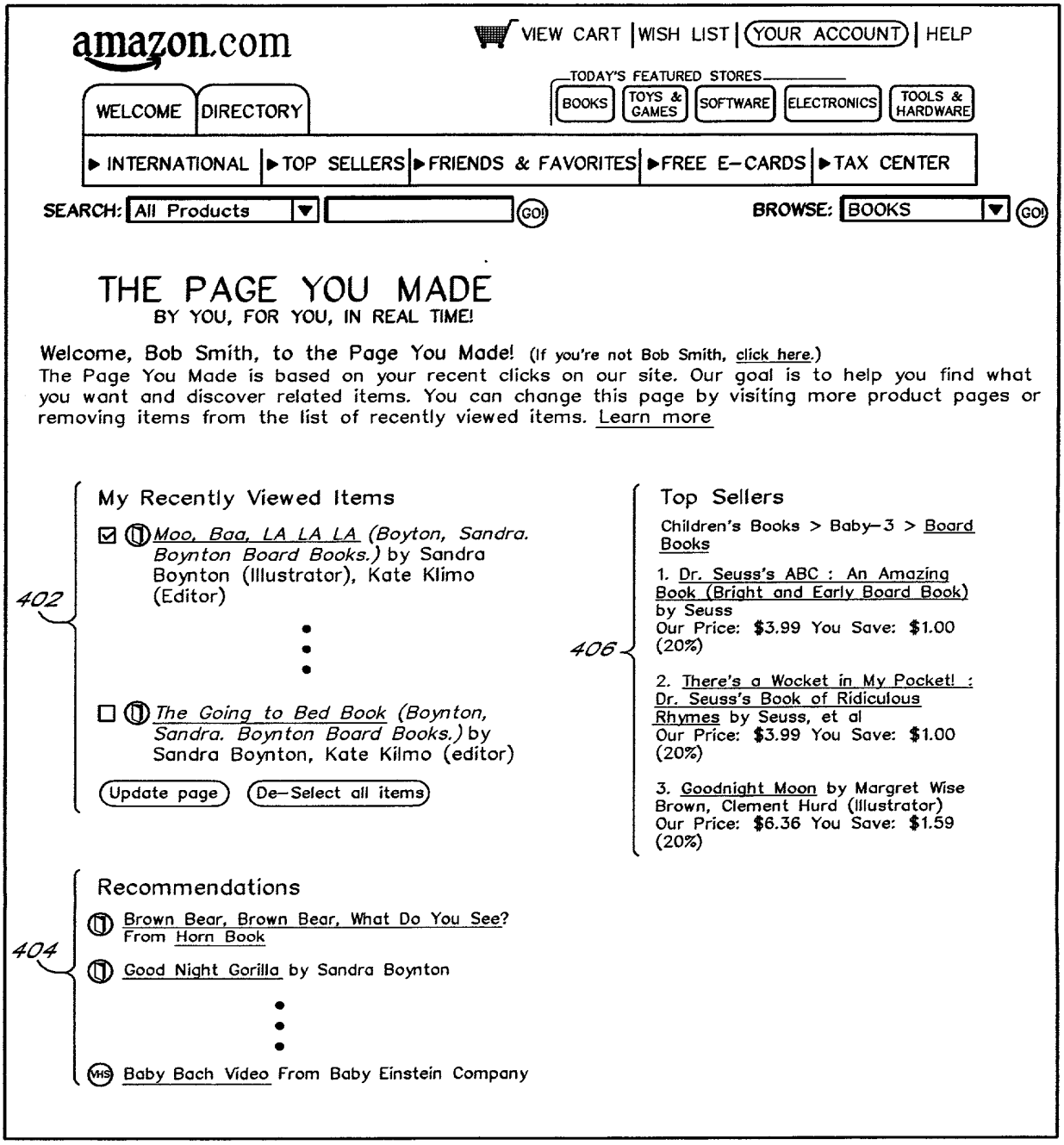
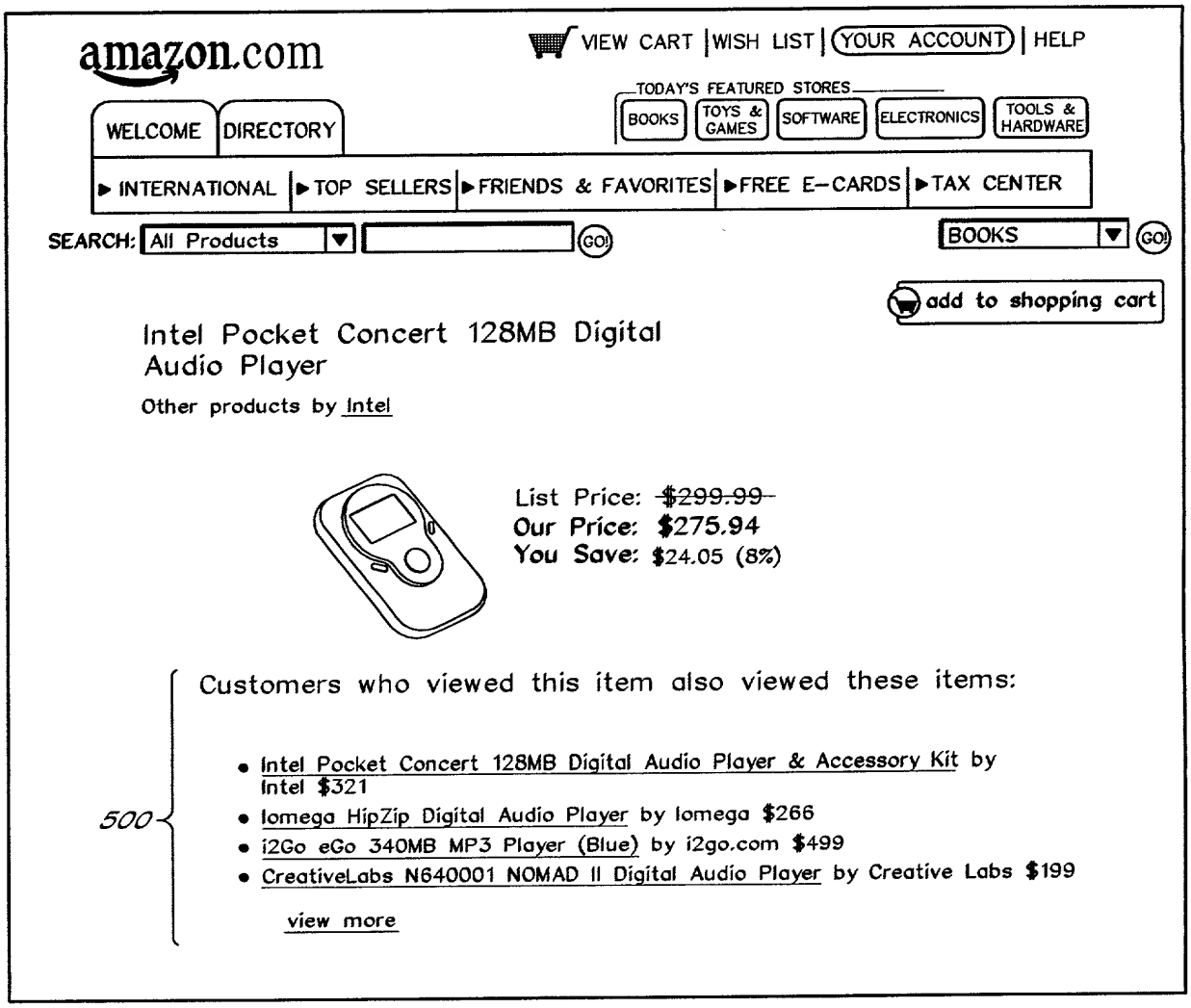

amazon.com
VIEW CART | WISH LIST | YOUR ACCOUNT | HELP
TODAY'S FEATURED STORES
BOOKS
TOYS & GAMES
SOFTWARE
ELECTRONICS
TOOLS & HARDWARE
WELCOME
DIRECTORY
▶ INTERNATIONAL
▶ TOP SELLERS
▶ FRIENDS & FAVORITES
▶ FREE E-CARDS
▶ TAX CENTER
SEARCH: All Products
GO!
BROWSE: BOOKS
GO!
THE PAGE YOU MADE
BY YOU, FOR YOU, IN REAL TIME!
Welcome, Bob Smith, to the Page You Made! (If you're not Bob Smith, click here.)
The Page You Made is based on your recent clicks on our site. Our goal is to help you find what you want and discover related items. You can change this page by visiting more product pages or removing items from the list of recently viewed items. Learn more
My Recently Viewed Items
402
Moo, Baa, LA LA LA (Boyton, Sandra. Boynton Board Books.) by Sandra Boynton (Illustrator), Kate Klimo (Editor)
The Going to Bed Book (Boynton, Sandra. Boynton Board Books.) by Sandra Boynton, Kate Kilmo (editor)
Update page
De-Select all items
Top Sellers
406
Children's Books > Baby-3 > Board Books
1. Dr. Seuss's ABC : An Amazing Book (Bright and Early Board Book) by Seuss
Our Price: $3.99 You Save: $1.00 (20%)
2. There's a Wocket in My Pocket! : Dr. Seuss's Book of Ridiculous Rhymes by Seuss, et al
Our Price: $3.99 You Save: $1.00 (20%)
3. Goodnight Moon by Margret Wise Brown, Clement Hurd (Illustrator)
Our Price: $6.36 You Save: $1.59 (20%)
Recommendations
404
Brown Bear, Brown Bear, What Do You See? From Horn Book
Good Night Gorilla by Sandra Boynton
Baby Bach Video From Baby Einstein Company

FIG. 11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TOOLS & HARDWARE
WELCOME
DIRECTORY
▶ INTERNATIONAL
▶ TOP SELLERS
▶ FRIENDS & FAVORITES
▶ FREE E-CARDS
▶ TAX CENTER
SEARCH: All Products
GO!
BOOKS
GO!
add to shopping cart
Intel Pocket Concert 128MB Digital Audio Player
Other products by Intel
List Price: $299.99
Our Price: $275.94
You Save: $24.05 (8%)
Customers who viewed this item also viewed these items:
500
• Intel Pocket Concert 128MB Digital Audio Player & Accessory Kit by Intel $321
• Iomega HipZip Digital Audio Player by Iomega $266
• i2Go eGo 340MB MP3 Player (Blue) by i2go.com $499
• CreativeLabs N640001 NOMAD II Digital Audio Player by Creative Labs $199
view more

FIG. 12

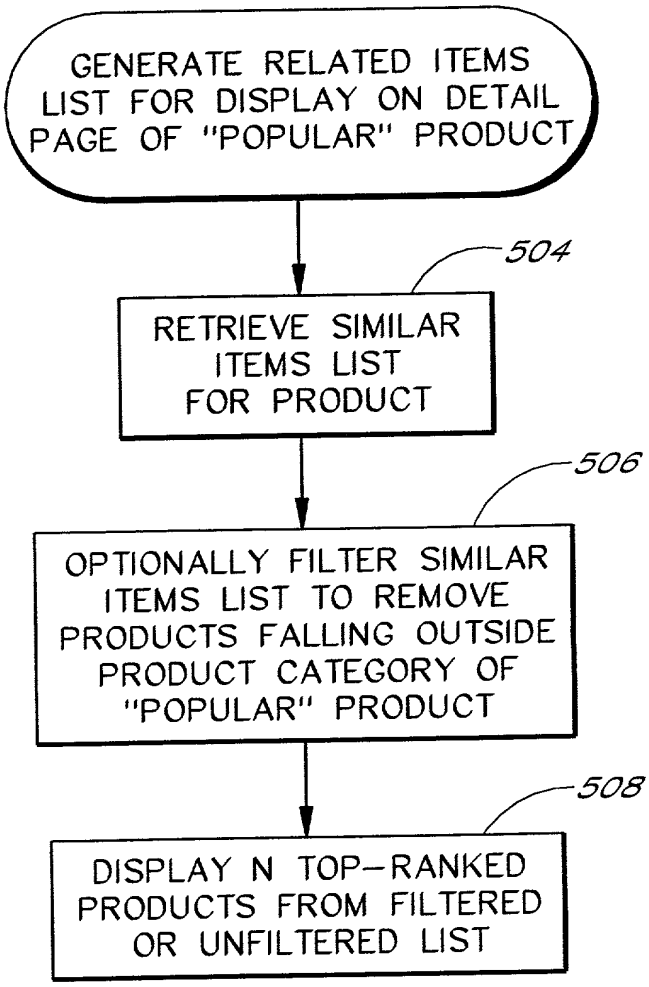
GENERATE RELATED ITEMS LIST FOR DISPLAY ON DETAIL PAGE OF "POPULAR" PRODUCT
504
RETRIEVE SIMILAR ITEMS LIST FOR PRODUCT
506
OPTIONALLY FILTER SIMILAR ITEMS LIST TO REMOVE PRODUCTS FALLING OUTSIDE PRODUCT CATEGORY OF "POPULAR" PRODUCT
508
DISPLAY N TOP-RANKED PRODUCTS FROM FILTERED OR UNFILTERED LIST

FIG. 13

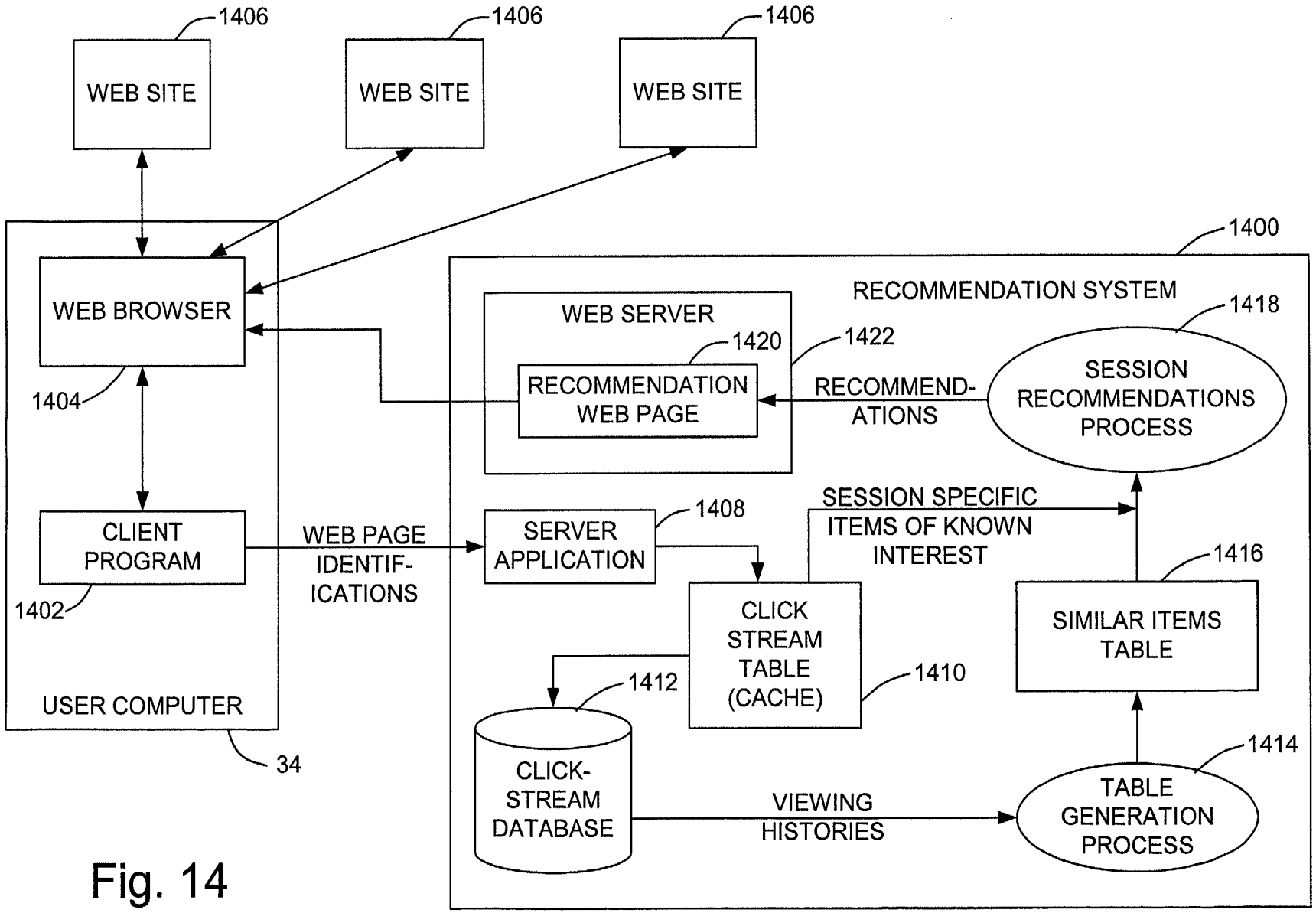
1406
1406
1406
WEB SITE
WEB SITE
WEB SITE
1400
WEB BROWSER
RECOMMENDATION SYSTEM
WEB SERVER
1418
1420
1422
RECOMMENDATION WEB PAGE
RECOMMEND-ATIONS
SESSION RECOMMENDATIONS PROCESS
1404
SESSION SPECIFIC ITEMS OF KNOWN INTEREST
1408
CLIENT PROGRAM
WEB PAGE IDENTIF-ICATIONS
SERVER APPLICATION
1416
1402
CLICK STREAM TABLE (CACHE)
SIMILAR ITEMS TABLE
1412
1410
USER COMPUTER
1414
CLICK-STREAM DATABASE
VIEWING HISTORIES
TABLE GENERATION PROCESS
34

Fig. 14

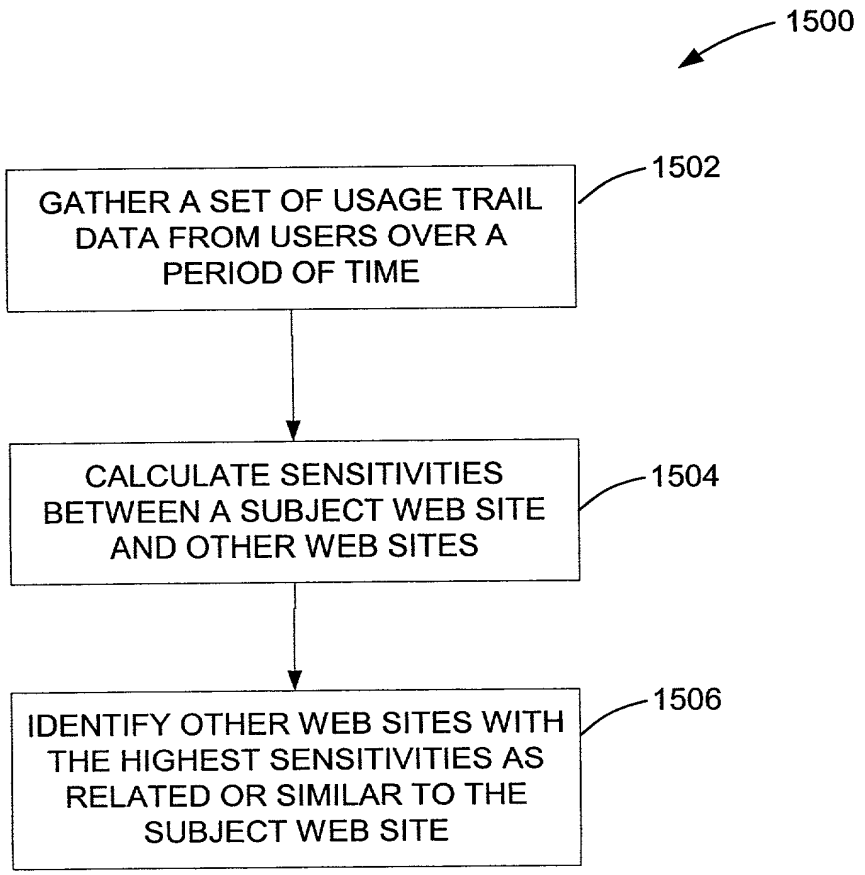
1500
GATHER A SET OF USAGE TRAIL DATA FROM USERS OVER A PERIOD OF TIME
1502
CALCULATE SENSITIVITIES BETWEEN A SUBJECT WEB SITE AND OTHER WEB SITES
1504
IDENTIFY OTHER WEB SITES WITH THE HIGHEST SENSITIVITIES AS RELATED OR SIMILAR TO THE SUBJECT WEB SITE
1506

Fig. 15